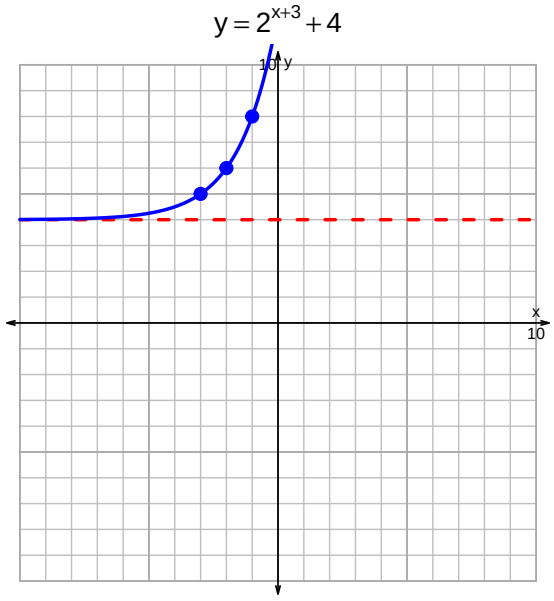
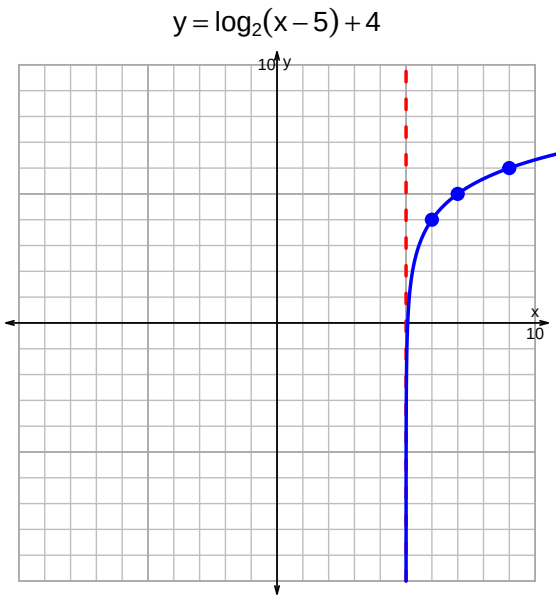
Name: Date:

S18QUIZ: EXP LOG (SLTN v222)

1. Graph $y = 2^{x+3} + 4$ and $y = \log_2(x-5) + 4$ on the grids below. Also, draw any asymptotes with dotted lines.





2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$19 = \left(\frac{4}{3}\right) \cdot 2^{-7t/5}$$

Divide both sides by $\frac{4}{3}$.

$$\frac{19 \cdot 3}{4} = 2^{-7t/5}$$

Take log, base 2, of both sides.

$$\log_2\left(\frac{19 \cdot 3}{4}\right) = \frac{-7t}{5}$$

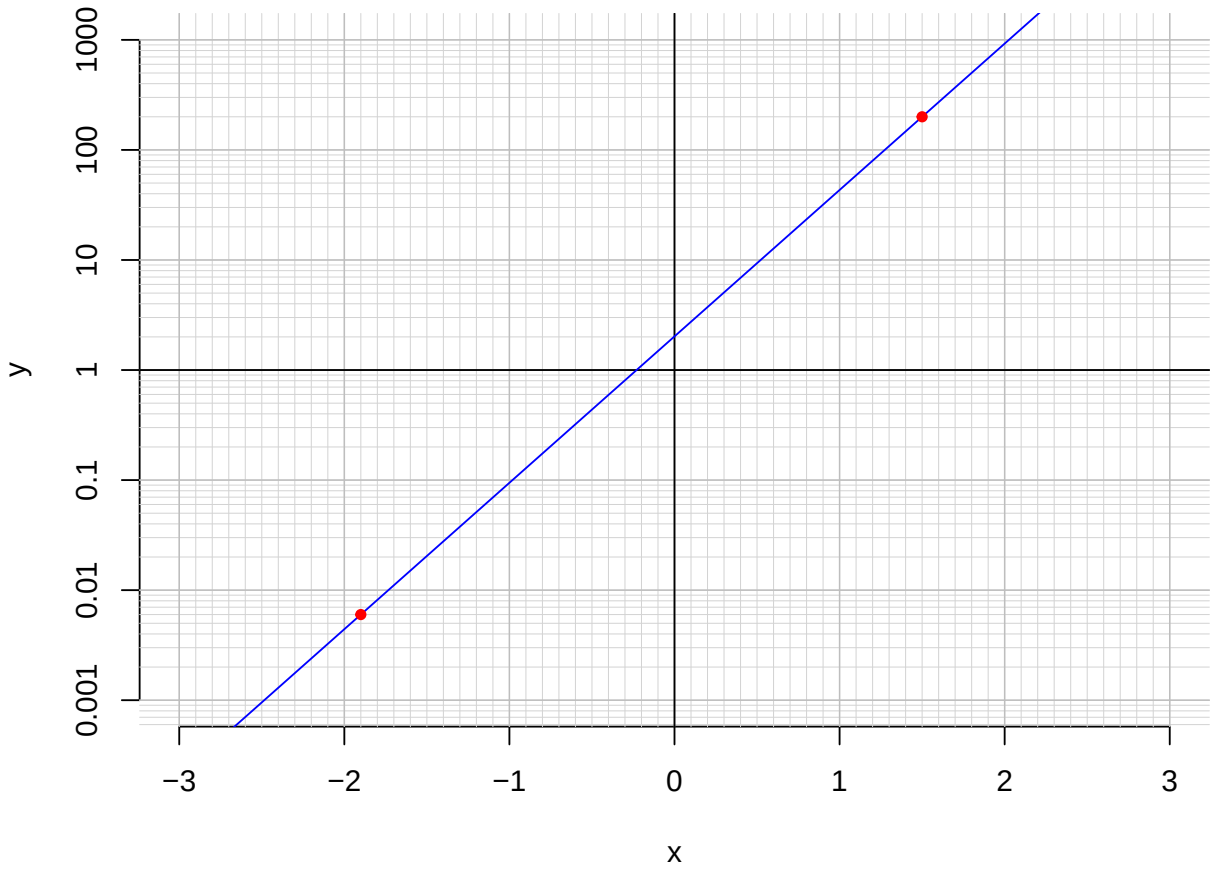
Divide both sides by $\frac{-7}{5}$.

$$\frac{-5}{7} \cdot \log_2\left(\frac{19 \cdot 3}{4}\right) = t$$

Switch sides.

$$t = \frac{-5}{7} \cdot \log_2\left(\frac{19 \cdot 3}{4}\right)$$

3. An exponential function $f(x) = 2.02 \cdot e^{3.06x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(1.5)$.

$$f(1.5) = 200$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{1}{3.06} \cdot \ln\left(\frac{x}{2.02}\right)$$

c. Using the plot above, evaluate $f^{-1}(0.006)$.

$$f^{-1}(0.006) = -1.9$$